

# Yaesu FT-8x7 Interface box

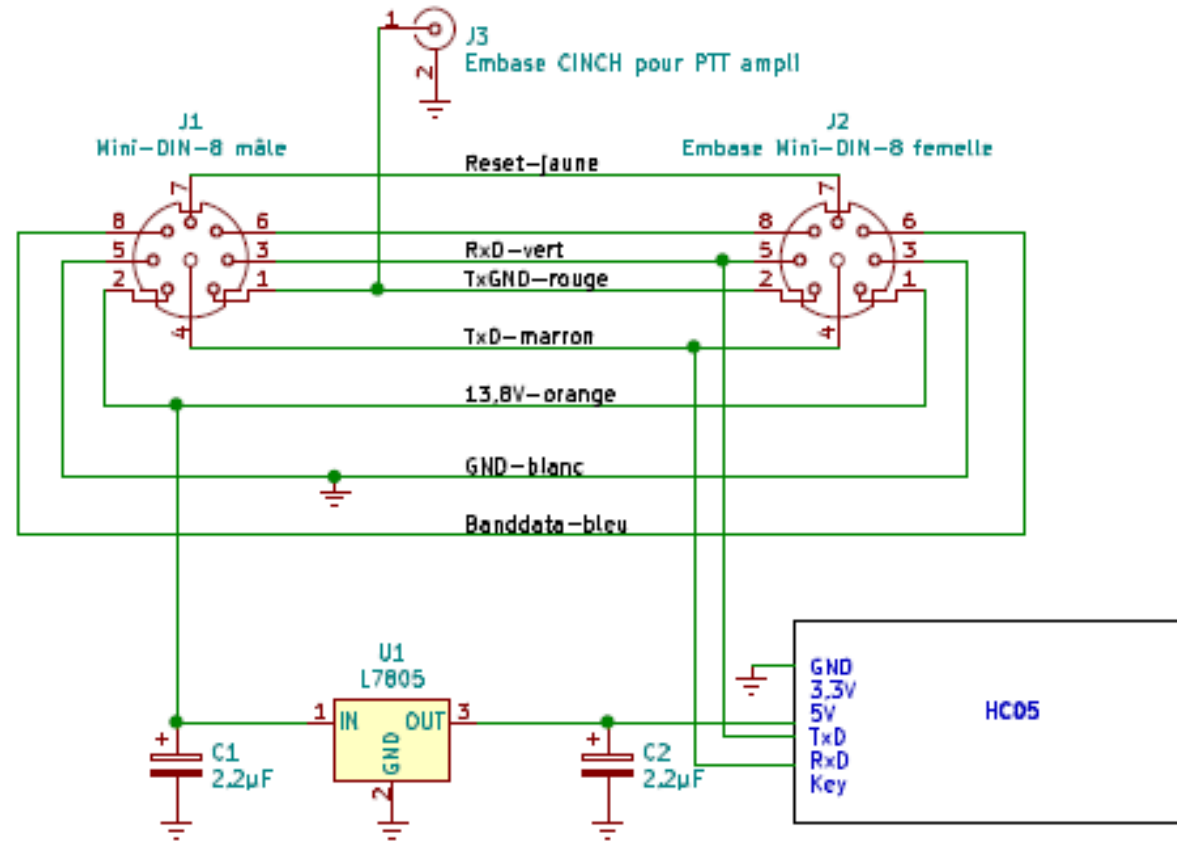
# GOALS

- For the FT-817, FT-857 and FT-897 radios it is not possible with a standard cable to connect the mini-DIN 8 pins socket simultaneously to a computer (CAT link) and to an amplifier (PTT).
- Box goals:
  - Allow from the mini-DIN 8 pins socket the simultaneous connection of a serial CAT link and of a control of an amplifier antenna relay (PTT).
  - Incorporate a Bluetooth module to allow the replacement of the wired serial link with the computer by a Bluetooth serial link.

# TOOLS

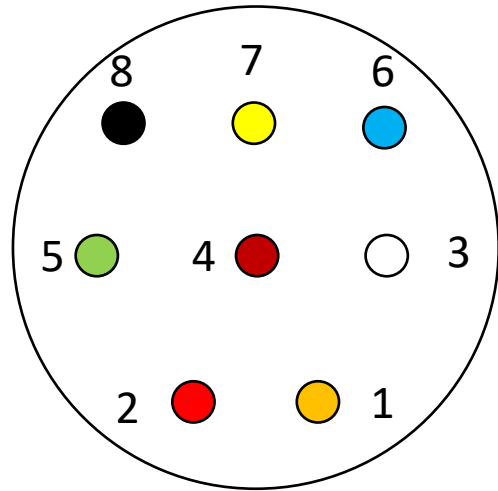
- Pcb schematic : KICAD,
- Box design: TINKERCAD,
- Tests :
  - SPCA software,
  - Bluetooth Serial Terminal software,
  - HAMRADIO Deluxe version 2015 for CAT trials.

# Schematic



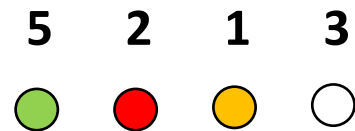
Le mini-DIN mâle est au bout d'un câble qui est relié au FT-8x7.  
Les 8 fils sont soudés à l'arrivée sur le circuit imprimé

# Mini-DIN 8 female socket connections

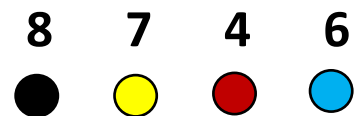


- 1 : 13, 8 V - orange
- 2 : Tx GND – red
- 3 : GND - white
- 4 : Tx D - brown
- 5 : Rx D – green
- 6 : Band data - blue
- 7 : Reset - yellow
- 8 : Tx INH - black

Front panel

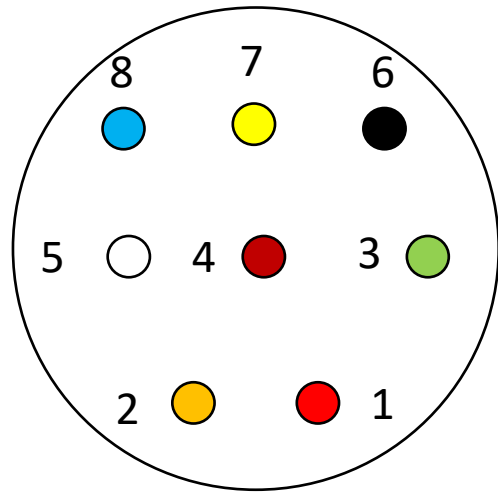


Front row



Back row

# Mini-Din 8 male plug connections



- 1 : Tx GND - red
- 2 : 13, 8V – orange
- 3 : Rx D- green
- 4 : Tx D - brown
- 5 : GND - white
- 6 : Tx INH - black
- 7 : Reset - yellow
- 8 : Band data - blue

Plug seen from the male pins side (not the solders side)

# HC05 Configuration

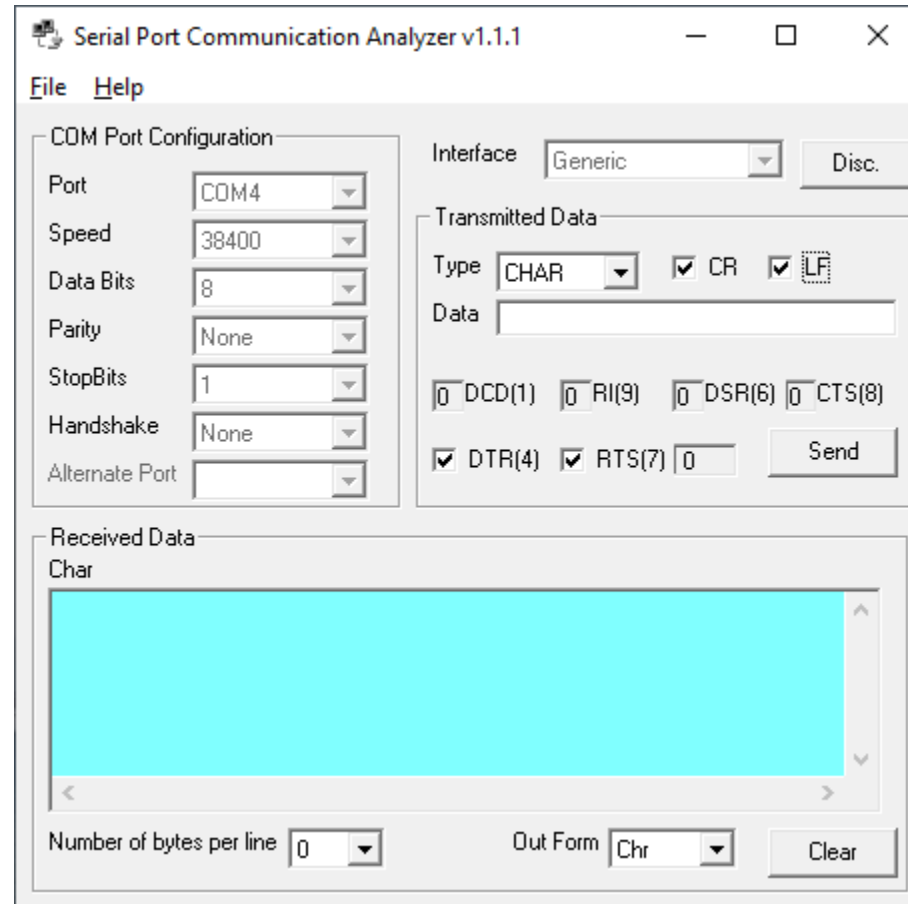
- The HC05 can be configured in bluetooth slave or master mode
  - Used here in slave mode
- To configure the HC05 the wired serial link parameters must be:
  - Speed 38 400 bauds, 1 stop bit, no parity, CR et LF
- The HC05 will be set-up with the following parameters :
  - Speed 4800 bits/s
  - No parity
  - 2 stop bits
  - Name (optional): FT-8x7
  - Pin code: 1234 (factory default)

# HC05 Configuration

- Configuration used to send the AT commands:
  - Windows 10 PC
  - USB-serial converter
  - RS232 – TTL converter
  - HC05 module with the Key pin connected to 3,3V
  - SPCA software from Y03GGX to send the AT commands on the COM port.
- Nota :
  - It is also possible to configure the HC05 with an USB-TTL converter or an Arduino
  - See the Y03GGX Web pages (Cf. References)



# HC05 Configuration with the SPCA software



# HC05 Configuration

- Link test: Send « AT »
  - Reply: OK
- On-board name : Send « AT+NAME »
  - Reply: +NAME:HC-05
- Name modification: Send « AT+NAME=FT-8x7 »
  - Reply: OK (the modification can be checked with the previous command)
- On-board speed: Send « AT+UART »
  - Reply: +UART:9600,0,0 (9600bits/s, 1 stop bit, no parity)
- UART parameters modification: « AT+UART=4800,1,0 »
  - 4800bits/s, 2 stop bits, no parity
  - Reply: OK (the modification can be checked with the previous command)

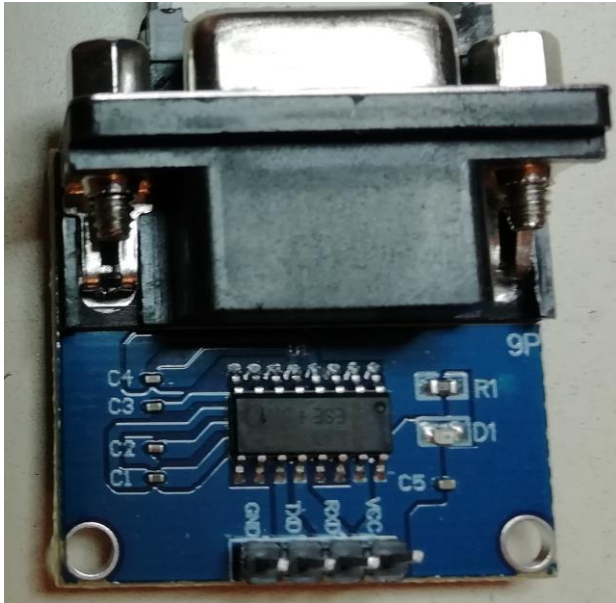
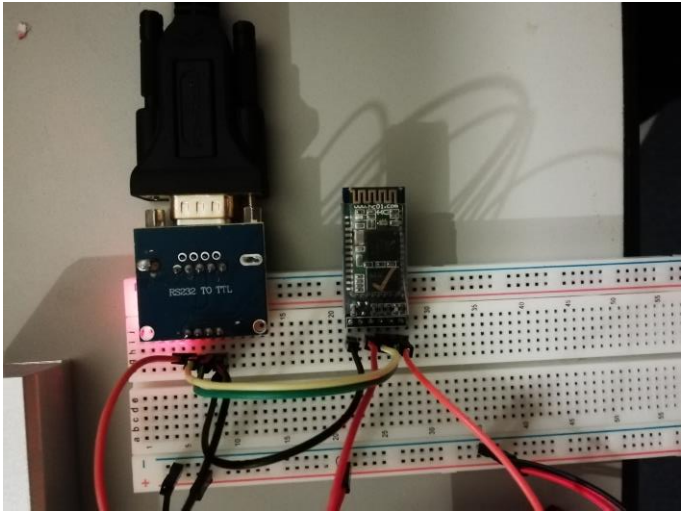
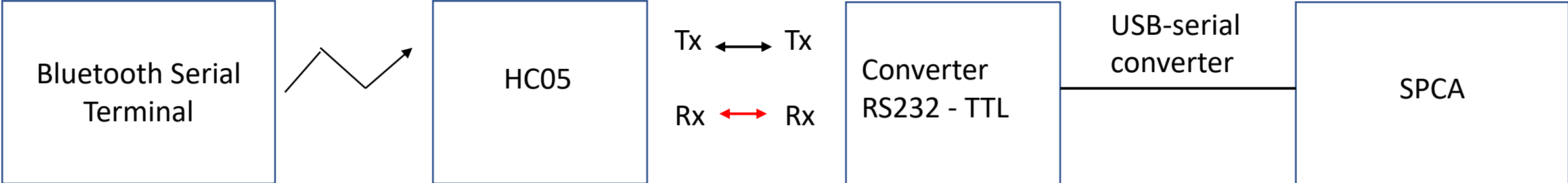
# HC05 Configuration

- Password: Send « AT+PSWD »
  - Reply: +PSWD:1234
- Password modification: Send« AT+PSWD=xxxx »
  - Reply: OK (the modification can be checked with the previous command)
- The AT commands can be found on the various Web sites and in the two pdf files.

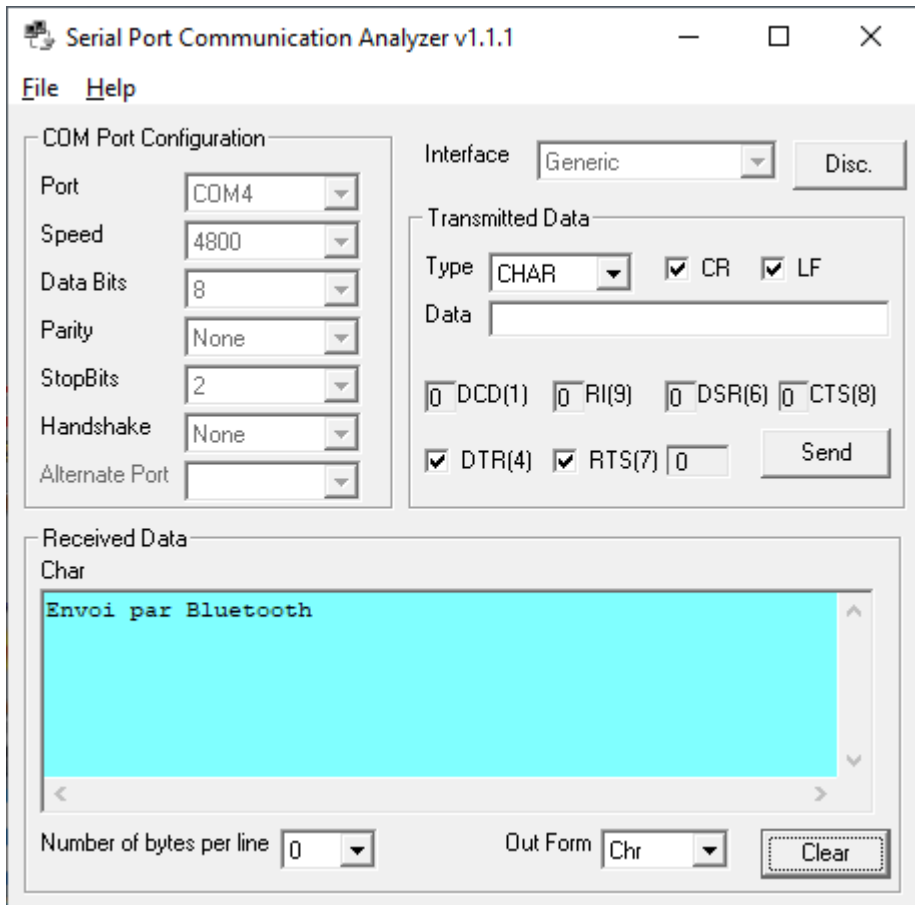
# HC05 Test Configuration

- Test configuration under WINDOWS 10:
  - Bluetooth Serial Terminal software
  - SPCA software
  - The wired serial link and the Bluetooth link
  - Nota :
    - The Key pin from the HC05 module is no more connected to 3,3V
    - The serial link configuration is now 4800 bits/s, 2 stop bits, no parity
    - Le HC05 must be paired with the computer before the use of Bluetooth Serial Terminal

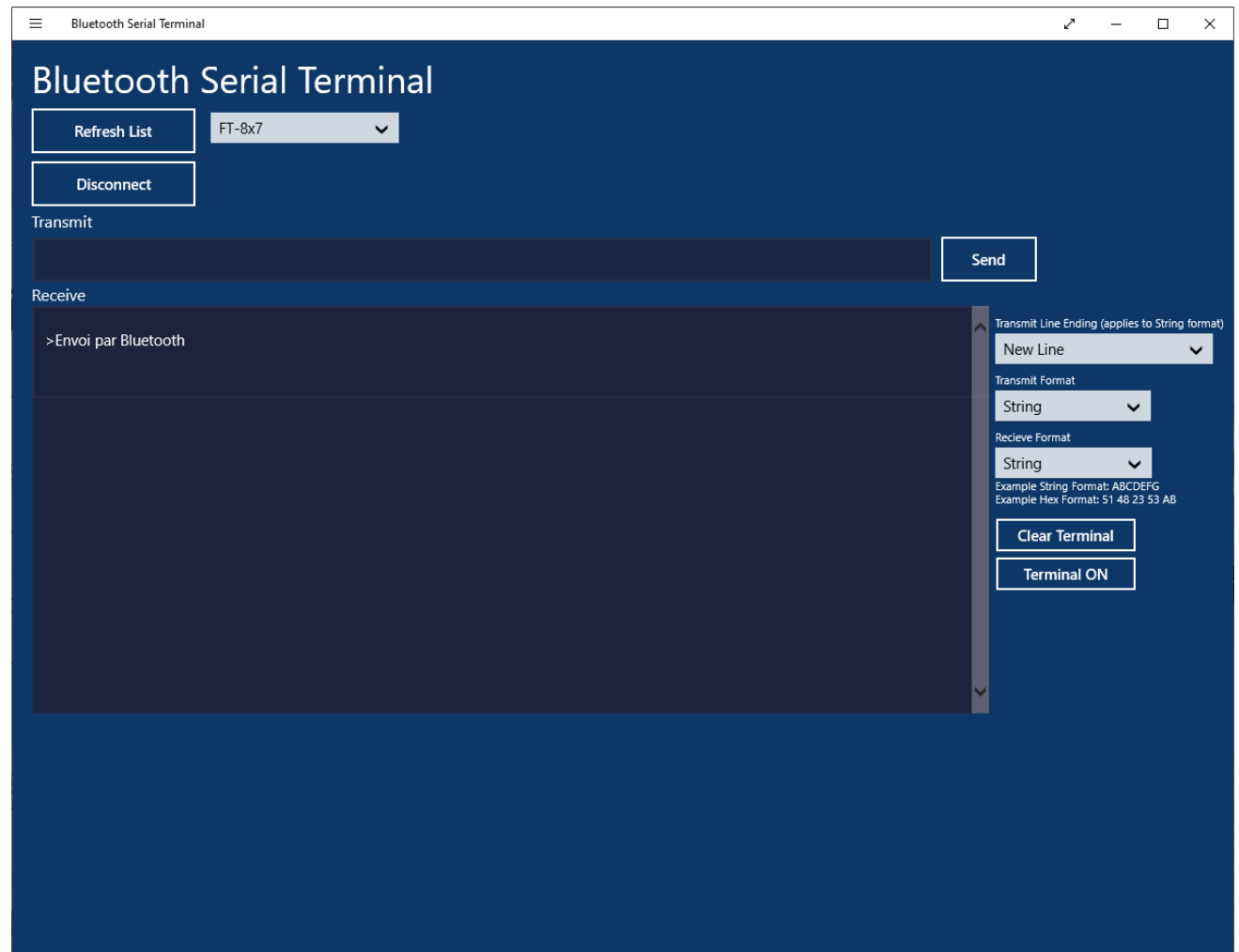
# Test Configuration



# Communication Tests



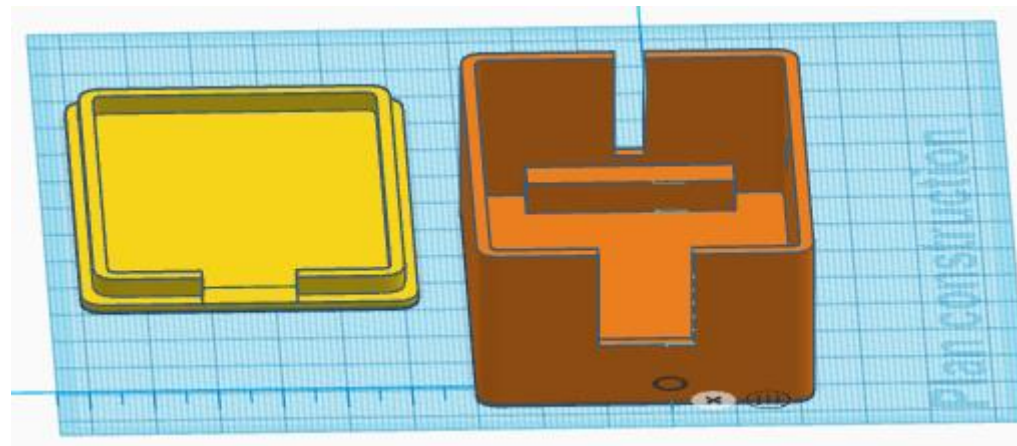
15/03/2020



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# Box mounting



# References

- <https://www.yo3ggx.ro/>
  - [https://www.yo3ggx.ro/btcat/FT8x7 DIY Bluetooth CAT interface v1.pdf](https://www.yo3ggx.ro/btcat/FT8x7%20DIY%20Bluetooth%20CAT%20interface%20v1.pdf)
  - <https://www.yo3ggx.ro/spca/spca.html>
- <https://www.instructables.com/id/AT-command-mode-of-HC-05-Bluetooth-module/>
- <https://www.tinkercad.com/>
- <https://kicad-pcb.org/>